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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,375	12/12/2003	Andreas Wittmann	ABACP0106USA	1820
43076	7590	01/03/2006	EXAMINER	
MARK D. SARALINO (GENERAL) RENNER, OTTO, BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE, NINETEENTH FLOOR CLEVELAND, OH 44115-2191			VY, HUNG T	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/735,375

Applicant(s)

WITTMANN ET AL.

Examiner

Hung T. Vy

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pm

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.  
4a) Of the above claim(s) 20-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-40 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/19/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### **Election/Restrictions**

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-32, drawn to a semiconductor laser, classified in class 372, subclass 49.
  - II. Claims 33-40, drawn to a method for manufacturing a coating on a facet of a semiconductor laser, classified in class 438, subclass 29.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case, unpatentabilities of the group I invention would not necessarily imply unpatentability of the group II invention, since the device of the group I invention could be made by other and materially different processes from those of the group II invention, for example, in the claim 33, wherein a deposition process can be use to make in different device (not semiconductor laser as claim 1).

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

2. This application contains claims directed to the following patentably distinct species of the claimed invention:

- a) Species I, a semiconductor laser defined by claims 1-19.
- b) Species II, a GaAs/GaAlAs-based semiconductor defined by claim 20.
- c) Species III, a InP-based semiconductor defined by claim 21.
- d) Species IV, an optical transmitter or amplifier defined by claims 22-27.
- e) Species V, an air-packaged optical unit defined by claim 28-32.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record

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showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mr. Mark D. Saralino on 12/08/2005 a provisional election was made without traverse to prosecute the invention of species I of Invention I (group I), claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 20-40 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### **Information Disclosure Statement**

3. The information disclosure statement (IDS) submitted on 04/19/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### **Specification**

4. The specification has been checked to the extent necessary to determine the presence of possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Rejections - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 6-12, 14-17 and 19 are rejected under 35 U. S. C. § 102 (e) as being anticipated by Kikawa et al. (U.S. patent No. 6,455,876).

With respect to claims 1-2, and 15 Kikawa et al. discloses a semiconductor laser emitting at a given wavelength with a coating on its emitting face, wherein said coating comprises an essentially amorphous  $\text{SiN}_x\text{:H}$  layer, x being a real number (See column 4, line 5-15) and it is inherent that with different thickness then the laser has different laser's wavelength , and refractive index being essentially determined by the Si/N ratio in and or the microstructure of said  $\text{SiN}_x\text{:H}$  layer (See column 5, line 1-45 and see fig. 1).

With respect to claims 3, and 19, Kikawa et al. discloses the thickness, in particular optical thickness, of the coating is selected to be one quarter of the laser's wavelength (see column 4, line 50-60).

With respect to claims 4 and 16, Kikawa et al. disclose the refractive index of the coating is tuned during the manufacturing process of the  $\text{SiN}_x\text{:H}$  layer, essentially by controlling its Si/N ratio and/or its microstructure (see column 4, line 36-46).

With respect to claims 6-8, and 17 Kikawa et al. discloses the coating is a multi-layer coating including at least one essentially amorphous  $\text{SiN}_x\text{:H}$  layer (See fig. 3), the ratio of Si to N of the  $\text{SiN}_x\text{:H}$  layer is tuned to effect a refractive index of the coating close to  $n_{\text{eff}}^{1/2}$  (see fig. 1).

With respect to claims 9-11, Kikawa et al. discloses the refractive index between approximately 1.6 to 2.4 (see column 5, line 46-48), and it is inherent that a reflectivity at the laser facet of approximately zero because in order to get laser emitting out of the active layer.

With respect to claim 12, Kikawa et al. discloses with the same structure as facet amorphous so the coating constitutes a phase shifting QW coating.

With respect to claim 14, Kikawa et al. discloses the thickness, in particular optical thickness, of the coating is selected to be one quarter of the laser's wavelength (see column 4, line 50-60).

### **Claim Rejections - 35 U.S.C. § 103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 5, 13 and 18 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kikawa et al. (U.S. patent No. 6,455,876).

With respect to claim 5, 13 and 18, Kikawa et al. discloses the claimed invention recited in claim 1 and 15 except for the Si/N ratio between approximately 0.3 and 1.5. It would have been obvious to one of ordinary skill in the art at the time the invention was made to different range of ratio, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Further, Kikawa et al. does not explicitly teach that the Si/N ratio between approximately 0.3 and 1.5. However, the range of ratio has been commonly used as properties of PECVD silicon Nitride (See prior art of record to Stanley Wolf et al., Silicon Processing for the VLSI ERA, volume 1, page 192, table 3). Therefore, to employ a different ratio of Si/N in the Kikawa et al.'s laser for having different reflective index purpose upon a particular application or environment of use would have been deemed obvious to an artisan skilled in the art of semiconductor laser.

### **Conclusion**

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung T. Vy whose telephone number is 571-2721954.

The examiner can normally be reached on 8.30am - 5.30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571 272 1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner



Hung T. Vy  
Art Unit 2821.

December 20, 2005.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung T. Vy whose telephone number is 571-2721954. The examiner can normally be reached on 8.30am - 5.30 pm.

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Hung T.Vy  
2821  
September 19, 2005.